C++ ASSIGNMENT

1.Ques :Which of the following(s) is/are true about bubble sort:

1.It is stable sort
2.It has a worst case space complexity of O(n)
3.It involves swapping of adjacent elements
4.After each iteration, the greatest element is placed at the end of the array.

Ans: 1,3,4

2.Ques :What will the following array look like after one iteration of bubble sort [1,6,2,5,4,3].

1.[1,3,2,4,5,6]
2.[1,2,3,4,5,6]
3.[1,2,5,4,3,6]
4.[1,2,4,5,3,6]

Ans: 3

3.Ques :In which case does bubble sort works in the most efficient way:

1.When the array is sorted in increasing order
2.When the array is sorted partially
3.When the array is sorted in decreasing order.
4.When the array is nearly sorted

Ans: 1

4.Ques:Sort the array in descending order using Bubble Sort.

Ans:
```
#include<iostream>
#include<vector>
using namespace std;
```

```
int main(){
        int testcase;
        cout<<"Enter no.of Testcases:";
        cin>>testcase;
        for(int i=0;i<testcase;i++){
        int n;
        cout<<"enter the array size :";
        cin>>n;
        bool flag=true;
        vector<int>v(n);
        for(int i=0;i<n;i++){
                cin>>v[i];
        }
        for(int i=0;i<n-1;i++){
                for(int j=0;j<n-1-i;j++){
                        if(v[j]<v[j+1]){
                        swap(v[j],v[j+1]);
                        flag=false;
                }
                }
                if(flag==true) break;
        }
        for(int i=0;i<n;i++){
                cout<<v[i]<<" ";
        }
        }
return 0;
}
```

5.Ques:Check if the given array is almost sorted. (elements are at-most one position away)

Ans:
```
#include<iostream>
#include<vector>
using namespace std;
int main(){
    int testcase;
    cout<<"Enter no.of Testcases:";
    cin>>testcase;
    for(int i=0;i<testcase;i++){
    int n;
    cout<<"enter the array size :";
    cin>>n;
    bool flag=true;
    vector<int>v(n);
    for(int i=0;i<n;i++){
        cin>>v[i];
    }
    for(int i=0;i<n-1;i++){
            if(v[i]>v[i+1]){
            swap(v[i],v[i+1]);
            flag=false;
        }
        i++;
    }
    for (i = 0; i < n - 1; i++)
    if (v[i] > v[i + 1]) {
    cout<<"No"<<endl;
    break;
    }
    if(i==n-1) cout<<"YES";
    }
```

```
return 0;
}
```